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ARROWHEAD

COMBAT DEVELOPMENTS COMMAND

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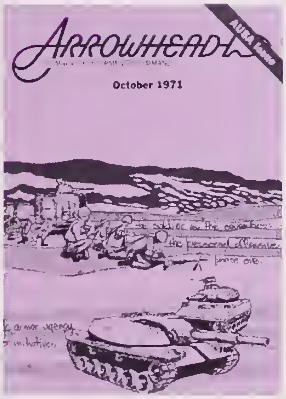

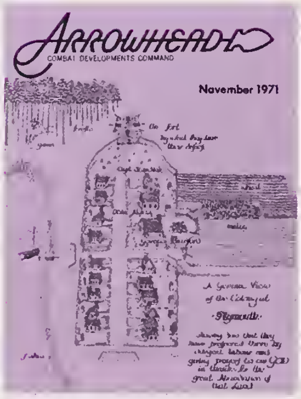

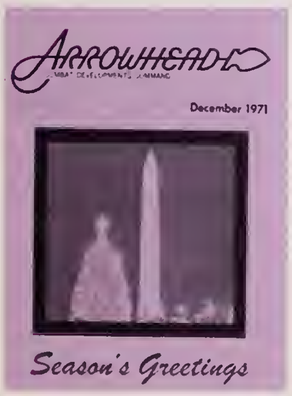

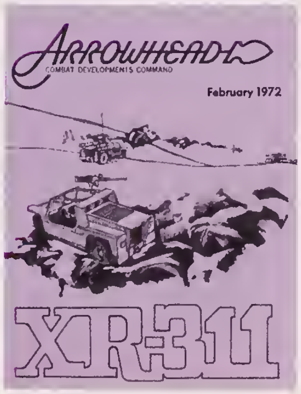

Commander's Call

The American Soldier of the Future

I am often asked what the future Army will be like. The most important thing is: the Army of the 1970's will not just happen. It will not be created by a research scientist. It will be built by the leaders and the Soldiers of today -- by the Army leadership at all levels.

One of the major factors that will influence us is the "volunteer" aspect of the Army of the 70's. As the Army strength drops and the US job market fluctuates, and as the Modern Volunteer Army Program brings about improvements in the life style of the Soldier and in professionalism -- and as combat development improvements take their place in the Army -- there will come a time at which these factors, functioning together, will give us a good chance to achieve an all-volunteer professional Army.

What will the Soldier of the Future be like? The answer to this question is more important than anything else in determining what kind of an Army we will have. The Soldier of the future will carry a different rifle. He will wear a different helmet. And he, himself, will be different in some ways. He will be sharper mentally and physically, on the average, than any of his American predecessors. He will adapt easily to technological advances in many fields.

He will be acutely aware of the several environments in which the Army lives -- the social, the ecological, and the political, for examples. He will be heavily committed to solve remaining American problems such as racism and drugs. If he "stands for" one ideal above others it will be for peace, and he will be a fine American, worthy to take his place in the long line.

And to challenge this man with an Army career, we will find one characteristic absolutely essential in all of us: that trait is PROFESSIONALISM.

John Norton
Lieutenant General, U.S. Army
Commanding

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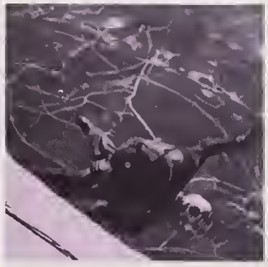

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ARROWHEAD

COMBAT DEVELOPMENTS COMMAND

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PICTURE CREDITS: Page 19, Page 23 (top left and right, bottom left), Steimer. All other photos US Army Photo.

ABOUT THE COVER

FRONT: Pictured are the front covers of the past nine issues of ARROWHEAD.

BACK: CDC's responsibilities are graphically illustrated with the use of a prism to show how all input is eventually categorized to reveal how the Army will fight, be equipped, and be organized.

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The ACV . . . Traveling on Air

BY H. N. WOOD

More efficient logistical support for armies in worldwide environments is an objective for all military planners. This objective has no single easy solution when we optimize it in terms of getting what we need, where we need it, and when we need it. And then we must keep it coming for indefinite periods! Logistics involves many areas of support, such as supply, maintenance, medical service, and other activities; however, my remarks will be confined to the transportation portion of this logistics problem (Figure 1). To me, of course, transportation represents the real key and challenge to the entire problem.

I will discuss air cushion vehicles (ACV's) in the logistical role by highlighting: early US development; current US military applications; and conceptual Army transportation roles (including logistical missions, organizational impacts, and design characteristics). The doctrinal requirements and concepts involving the movement of cargo and personnel by air cushion vehicles have been identified in the USACDC Transportation Agency as a result of an in-house study initiated approximately 3 years ago. We are continuing our examination, but at this point in time the study has not been completed and has not received the official approval of either the Combat Developments Command or the Department of the Army. So my remarks reflect my personal views regarding concepts and possible operating techniques and do not necessarily express Department of the Army policy.

EARLY US DEVELOPMENT

Early US development, while not as extensive as that conducted in the UK, is interesting in light of the state of the art today. In 1928, Dr. A. A. Kucher of Ford Motor Company theorized that air could be used as a lubricant between a vehicle and the ground, permitting it to slide rather than roll. He applied this principle to a full-scale levacar which was introduced in the spring of 1959. Airpads were used to support or levitate the small car on a surface-mounted monorail.

The first air cushion vehicle proposal in the US was proposed to the US Army for an off-the-road application in January 1957.

The first Army concepts regarding logistical applications were the Gemule, (Figure 2), and Gempad for use as one-man tactical carriers. The Gemule was a 3 by 7-foot litter and small load carrier. This test bed was powered by a 7-horsepower (hp) chain saw motor; however a 3-hp motor could support the empty carrier plus 200 pounds. It was designed to collapse into a package weighing between 45 and 55 pounds. This initial concept vehicle was equipped with a 14-inch skirt.

Both concepts were conceived in 1959 and test beds built at the Transportation Center, Ft. Eustis, Va. Between 1958 and 1960, several experimental models were produced by Bell, Curtis-Wright, Ford, Chrysler, National Research Associates, and Princeton University.

SKMR–1, designed and built by Bell Aerosystems during 1962 and 1963 for the US Navy, was the largest and most powerful air cushion vehicle constructed in the United States. Of annular jet design, the hydroskimmer (Figure 3)

Mr. Wood is assigned to Combat Developments Command Transportation Agency at Ft. Eustis, Va.

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* A condensation of the paper presented 16 June 1970, at the Fourth Canadian Symposium on Air Cushion Technology held in Toronto; sponsored by the Canadian Aeronautics and Space Institute.

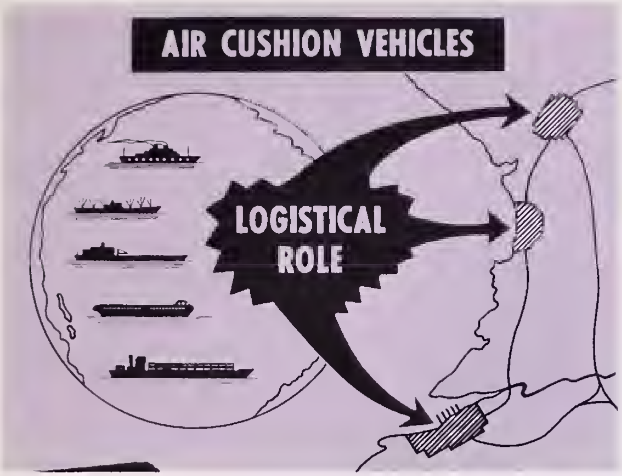


Figure 1

Figure 2

had four fans mounted in the hull to provide the air cushion for the 65-foot craft. Two 10-foot air screws mounted in ducts on the after decks supplied the thrust. Speeds exceeding 70 knots were achieved. Directional control was provided by aerodynamic rudders in the slipstream. Four marine gas turbines rated at 1080 hp at 1800 rpm each provided the power for the lift and propulsion systems. This program accumulated research information to formulate design criteria for future vehicles of this type.

The SK-3 Carabao began operational testing in March 1963. During late '63 and '64, the Carabao completed a successful series of operational demonstrations in the marshes and shallows of Lake Okeechobee, Florida, on the James River at Ft. Eustis, Va., and on the Potomac River at Washington, D.C. During July the Carabao demonstrated the capability of the air cushion vehicle concept as a means of transportation in polar regions during a month-long evaluation in Greenland. This craft provided a means to fill the gap between the D-8 Cat Sled Train (averaging about 2 miles per hour (mph)) and aircraft which by experience could be employed about 1 day out of 30 due to adverse weather. The average speed over the ice cap was approximately 35 knots. The SK-3 had three circular plenum cells equally spaced around the center lift fan. Maneuverability was provided by rudders in the slipstream of its single variable pitch propulsion propeller. A 125-hp Franklin aircraft engine provided the lift and a 150-hp Lycoming aircraft engine provided the thrust with a maximum speed of 60 mph. While the Army entered this new transportation field early in US development, the acceptance of the air cushion principle for current or future military requirements has been extremely slow.

CURRENT US MILITARY APPLICATIONS

Current US military applications consist of three Patrol Air Cushion Vehicles (PACV's), (Figure 4), which were operated by the US Navy in Vietnam from May 1966 to March 1969, when they were withdrawn from service and returned to CONUS. These are British-manufactured SR.N5's, which were re-engined by Bell Aerosystems for US military applications in Vietnam. They have been rehabilitated and are currently being operated by the USCG.

Figure 5 shows one of the Army SK-5's which were the first completely American manufactured air cushion vehicles produced in the US for military operational requirements. They arrived in RVN during May 1968 and have been successfully employed in the role of Armored Cavalry in overwater and marginal areas for armed patrol, reconnaissance, troop insertion, and security missions. Due to their combat configuration they were utilized in limited logistical roles.

CONCEPTUAL ARMY TRANSPORTATION ROLES

In discussing conceptual Army transportation roles for air cushion vehicles, I believe that we should optimize around military applications and missions which emphasize the requirement for highly mobile vehicles with improved movement capabilities at moderate speeds over varied surfaces to support dispersed and fluid operations in a worldwide environment. This is where the air cushion principle can be seriously considered.

As an amphibious vehicle, the air cushion vehicle is unique in its ability to operate above the surface without friction, which results in maximum thrust efficiency. The air cushion principle provides a higher-speed amphibious capability without the complicated transmission of power to ground contact wheels and associated maintenance problems. Since the amphibious air cushion vehicle operates above the surface (effectively at zero draft), variable water depth does not affect its operation. This is a serious consideration for all types of current watercraft, including conventional displacement type hulls, landing craft, and amphibians. For these craft to transit varying water depths, advance reconnaissance, possible obstacle clearance, and slow, detailed navigation are normally required. Soft, marshy, or solid ground, if it is comparatively level, can be traversed easily by current amphibious air cushion vehicles. In inland waterway and coastwise operations, the air cushion vehicle could overcome the inherent limitations of extended transit times, vulnerability to enemy action, and climatic change of current Army lighterage. I consider the air cushion vehicle a promising candidate for combat service support roles in a marine environment and adjacent areas.

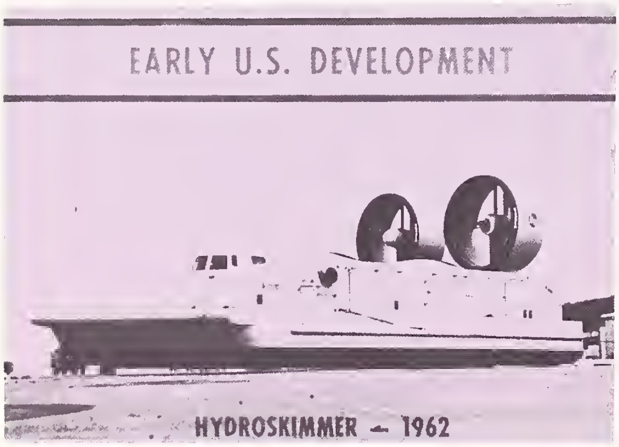


Figure 3

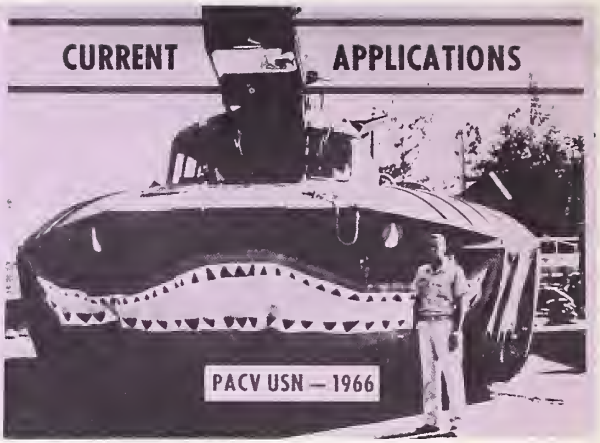


Figure 4

In pursuing our current study of air cushion vehicles, we have determined basic concepts for applications of the air cushion principle to meet Army lighterage requirements. We have identified a proposed system as the Rapid Overwater Transportation System (ROWTS), (Figure 6). The stated mission of ROWTS is to provide rapid overwater lift of cargo and personnel in support of logistics over-the-shore (LOTS) operations and other transportation movements over inland waterways, between water terminals and coastal points. The basic system consists of amphibious and/or semiamphibious air cushion cargo vehicles which will provide for the movement of cargo and personnel between ocean transportation standing offshore and beach transfer points or between water terminal facilities. Beaches and other more difficult shorelines, such as deltas, shallows, sandspits, and other marginal areas, will be traversed to the extent required by the amphibious type craft to reduce requirements for trans-shipment. The organization for operations envisions amphibious and/or semiamphibious air cushion cargo vehicles (with a beaching capability) either as substitutes or replacements for our amphibious vehicles (lighter, amphibious, resupply, cargo, 5-ton (LARC-5, -15, -60) and landing craft such as the landing craft, mechanized, Mark VIII (LCM-8) and landing craft, utility (LCU).

In the LOTS type operation a critical factor is the reduction or suspension of operations due to adverse weather. The current state of the art and experience gained on the channel crossings indicate that air cushion vehicles have superior sea-keeping characteristics when compared with LARC's or small landing craft of the LCM-8 or LCU class.

A vital factor which directly affects turnaround time is the rate of speed of loading at shipside and discharge on the beach or at inland points. We call this "hook time." Craft speed is of little advantage when operating short distances offshore if hook time amounts to hours on each end of the movement. Cargo ships must be self-sustaining with gear capable of rapid discharge or backloading of cargo and equipment—or prepositioned barge cranes must be readily available. With the advent of 20- to 40-foot containers, unitized and intermodal shipments, special rapid handling and clearance capabilities on shipboard, afloat, and inland become mandatory. The use of air lubricated decks aboard vessels and on lighterage plus air pallets and conveyors could further reduce cargo handling time. These techniques must be seriously considered in any total system and air cushion trailers should not be overlooked.

Looking beyond the immediate future, we are developing for the 1980–85 time period expanded concepts and doctrine for an integrated high-speed above-surface transportation system. Amphibious air cushion cargo vehicles could provide a rapid throughput capability without interchange. These craft may require retractable surface contact wheels for added control and traction while going inland. Tradeoffs between improved precision in control and the attendant structural penalties must, of course, be evaluated.

We visualize movements from ocean transportation direct to area stock distribution points, airfields, or staging areas and railheads within the communications zone. In addition, we anticipate overland resupply requirements totally within this area. We have identified this overall concept as Rapid Lift of Personnel and Cargo (RALPAC). Figure 7 illustrates the proposed RALPAC operational area. This broad application is supported by two proposed operational systems. I have already mentioned the ROWTS.

We are presently considering a second, designated as the Rapid Overland Transportation System (ROLTS), (Figure 8). Based on discussions with knowledgeable air cushion technicians and operators, our concept for the future holds considerable promise. While basic considerations, such as the overall size, gradient capability, and obstacle clearance capability, of today's air cushion vehicle appear to limit considerations for overland transit, they are not con-

Figure 5

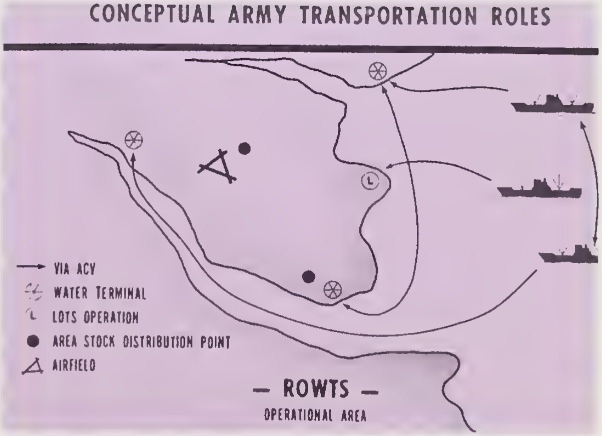


Figure 6

sidered insurmountable by the 1980–85 time frame. This system will be utilized primarily in undeveloped or underdeveloped areas of the world. It could be employed in developed and congested areas where air cushion vehicle routes or hoverways could be authorized. Existing routes could be used on a priority basis or new routes constructed with minimum cut and fill engineer effort.

Immediate advantages are apparent when requirements for trans-shipment are either deleted or reduced, and turnaround time is lessened substantially. Figure 9 is a comparison between the current LOTS operation and the proposed RALPAC system.

"Organizational Impacts" could be far reaching if military applications continue to expand in the future. We would be supporting surface effect ships capable of 100-knot speeds, which make total turnaround time critical in terms of hook time at the cargo discharge point. Improved rapid materials handling techniques would become mandatory. Container-handling cranes, capable of picking, moving, and depositing a box every 2 minutes, must be part of these technological improvements. Rapid amphibious air cushion vehicles would replace our current LARC family and landing craft. The total number of conventional cargo vehicles and associated operating and maintenance personnel would be materially reduced. Requirements for beach installations, shore facilities, and trans-shipment points would be deleted. The total number of control headquarters required would be reduced. Operating headquarters and control organizations would be located deeper within the theater area. This materially reduces the cost of facilities and their daily support, including savings in construction, maintenance, and security of road nets from within the theater to beach areas, communication facilities, and personnel.

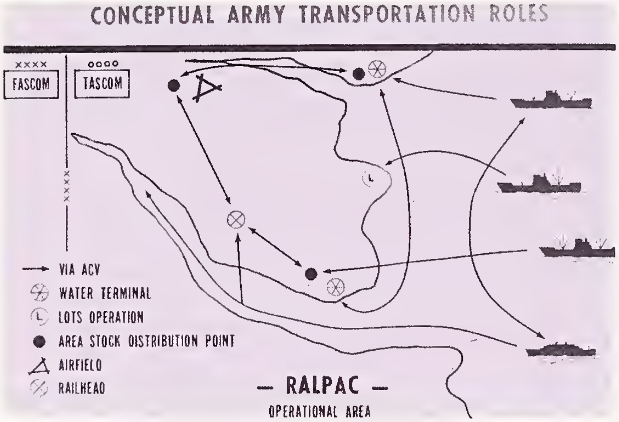


Figure 7

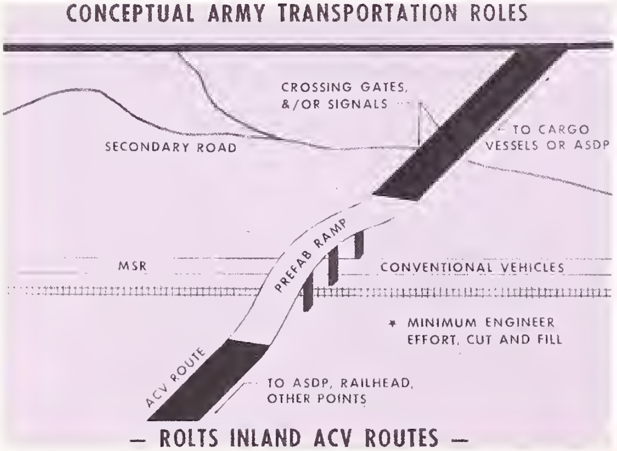

CONCEPTUAL ARMY TRANSPORTATION ROLES
CROSSING GATES, &/OR SIGNALS
SECONDARY ROAD
TO CARGO VESSELS OR ASDP
PREFAB RAMP
MSR
CONVENTIONAL VEHICLES
* MINIMUM ENGINEER EFFORT, CUT AND FILL
ACV ROUTE
TO ASDP, RAILHEAD, OTHER POINTS
— ROLTS INLAND ACV ROUTES —

Figure 8

We are at the point now to examine what is required in the design of a cargo air cushion vehicle and what the configurations may be. Unfortunately, to date, there are no pure cargo air cushion vehicles in operation. I am referring specifically to the movement of mass tonnage cargo and not ferry operations involving passengers, cars, and limited cargo. The foremost obstacle to wide military use of air cushion vehicles is the current high acquisition cost of most systems. It is considered mandatory that consideration be given to simplified basic structures, new materials, lighter weight, more efficient and less costly propulsion/lift units, long-life skirts, and the reduction of maintenance requirements. Specific design characteristics must include:

Deck arrangement:

Open cargo well deck designed to accomodate containers, vehicles, and palletized general cargo (essential).

Roll-on/roll-off (RO/RO) capability with two ramps (essential).

No obstructions above the top of the well deck except the control cabin (essential).

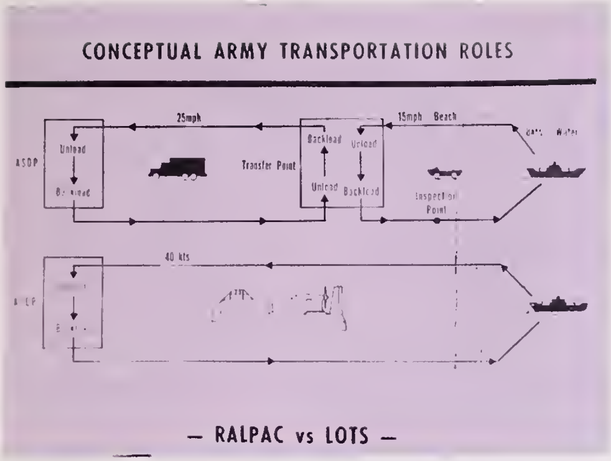


Figure 9

Air lubricated deck (desirable).

Safe troop carrying capability (desirable).

Improved Engineering:

Minimum width consistent with sound engineering practices (essential).

Overall length not to exceed 100 feet for heavy lift air cushion vehicle (desirable).

Simplified controls and improved all-around visibility (essential).

Improved control (essential).

Integral fenders around the entire periphery of the vehicle (essential).

Integral jacks for bottom and skirt repair (desirable).

All weather capability with radar and communications (essential).

Get home capability (essential).

Performance:

Speed—continuous with PL—35 knots maximum—44 knots (desirable).

Endurance—6–10 hours with PL (essential).

Overload capability—25 percent (desirable).

Vertical obstacle clearance—5 to 7 feet depending on size of craft (essential).

Gradient capability—at cruise (100 yards)—30 percent (essential); at hover—15 percent.

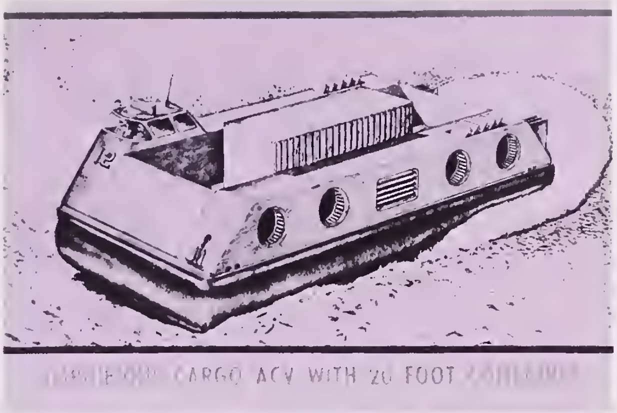


Figure 10

Lift payload—20 to 70 short tons (essential).

Towing capability (for air cushion trailers) (desirable).

Since efficiency usually depends on speed, the total power required for an ACV tractor with an ACV trailer may exceed that of two powered ACV's. This consideration requires additional evaluation. And, of course, all components on the craft must be protected for arctic, marine, tropical, and desert operations.

Figure 10 shows an artist's conception of a cargo air cushion vehicle, which could be considered in fulfilling the transportation role within combat service support missions. This type vehicle represents possible adaptations of current lift and propulsion systems but does not reflect any particular manufacturer.

We should take full advantage of industrial development and valuable experience gained by commercial carriers in this rapidly expanding field. The engineering advances made in air cushion vehicles by industry during recent years make cargo versions for military applications a reality. I consider that industry has provided a solution to transportation people striving to provide more effective logistical support for armies in the field. The future for air cushion vehicles in a military logistical role appears bright—the only questions that we have to answer are: (1) What can we, as conceptual planners, do to identify additional valid operational applications and requirements? (2) What can industry do to meet our military design objectives for a simplified cargo craft at a lower unit cost?

SAY AGAIN ALL AFTER...

BY LT ROBERT H. GREGORY

Remember how the Sergeant used to greet the recruits in the morning with a boisterous "Good morning, men!"? The recruits would reply, but the Sergeant would suddenly yell, "I can't hear you!" The recruits would try again, but for several minutes the Sergeant would keep on yelling, "I can't hear you!" According to a recent conference held in San Antonio, Texas, that Sergeant may not have been harassing the men, for he may have been partially deaf.

In early September members of the United States Army Combat Developments Command's (CDC) Medical Service Agency from Ft. Sam Houston, Tex., hosted an Acoustic Protection Conference. Representatives of industry, the military and the medical field met to discuss the current incidence of acoustic damage in military personnel and to look into what is being done to retard or prevent a rise in hearing losses.

The problem is not a new one, for as long as there have been weapons and machinery making noise, man has suffered some degree of hearing damage. Unfortunately the incidence of hearing problems in the military has been on the rise in the last few years. Recently acquired statistics show that a few recruits in basic combat training suffer acoustic damage sufficient enough to make them ineligible for combat duty. As a result, conferees concluded, U.S. combat forces may be losing vital members of combat units because protective devices were either not provided or not worn.

The conferees agreed that the Army has yet to develop a protective device that will give *complete* acoustic protection to the Soldier. The standard issue ear plugs provide incomplete protection against the sound level produced by a main battle tank in a firing exercise. Even with the padded helmet worn by tank crewmen, acoustic damage is possible when a man is repeatedly exposed to such noise intensities without adequate protection.

The acoustic protection devices currently available through medical supply and regular supply channels can effectively reduce the incidence of noise-induced hearing loss if they are used by the individuals and utilized correctly. The most common of these devices are the standard issue ear plugs. However, Soldiers claim the ear plugs are uncomfortable and that the pain produced by the guns and machinery is less than that produced by the plugs, so they choose what they consider the lesser of two evils and do not wear them. Some discomfort results from poorly fitted ear plugs. Cigarette filters are not sanctioned but are the usual field expedient ear plugs. However, they provide very little protection.

It has been determined that the maximum allowable steady state noise level is 85 decibels on the "A" scale and the maximum impulse noise level is 140 decibels. The problem that arises from the maximum levels allowed is that there is no armored vehicle or weapon, with the exception of the M—79 grenade launcher, with noise levels below the maximum allowable. All are far beyond the 85 db. "A" level and pose a constant threat to the delicate human ear.

The U.S. Army Audiology and Speech Center estimates that less than ten percent of its patients suffered hearing losses in combat. The obvious inference here is that the vast majority of acoustic damage treated by the Center occurs in training situations and not on the battlefield.

The number of individuals seeking or receiving compensation does not give the complete picture of the effects of acoustic damage. The degradation of individual on-the-job performance by active duty personnel is another area of serious concern. One study of cadre personnel at a training base indicated that more than 50% had a hearing loss of sufficient magnitude to require an H—3 (hearing loss, assignment limitation) in their physical profile. Under strict interpretation of applicable regulations, these individuals should be removed from their jobs and reassigned to a low noise level job.

Another example is the Soldier who rides on an air assault in a Chinook helicopter and upon arrival and dismounting is unable to hear and respond to voice commands as well as hostile sounds, due to the temporary threshold shift induced by the extreme noise levels experienced in the helicopter. These examples, among the many possible, point out the serious problem of reduced personnel efficiency that could affect the mission capability of the Army.

The conference members were in agreement in regards to the methods used to measure sound pressure levels and attenuation characteristics, but many favored the proposal of having testing centralized in one laboratory site. Such things as equipment calibration, microphone placement, and recorder sensitivity can significantly affect the outcome of sound pressure measurements. By conducting all measurement testing in a central laboratory,the validity of the results would be greater.

The state-of-the-art in acoustic protection has made considerable progress in the last few years. A notable fact is that in designing protection devices much of the attenuation characteristics are lost due to the constraints in the design of the equipment with which the acoustic protection device will be utilized. As an example, if an ear muff type protection is provided it must be designed to adapt to the design of the steel helmet worn by the Infantryman. Further evidence of this is in the case of a device designed for maximum attenuation of low frequency sounds losing some of its effectiveness when experiencing high frequency sounds. It is apparent that protectors have to be designed to meet the requirements of the particular task situation. As a result, design limitations render an evaluation of the state-of-the-art a very complex task. Although devices are available today that nearly meet the theoretical limits of attenuation in one or more frequencies, it does not appear possible within the design constraints to fabricate one device that will approach these limits in all frequencies.

Cost is one of the major problems facing the development of acoustic protection devices. The Army's new SPH–4, Flyer's Helmet, has adequate attenuation levels to provide complete acoustic protection for aircrew personnel operating in military aircraft. The older APH-5 helmet does not provide nearly as much sound protection as the new helmet, but the new helmet is not being used by all personnel at this time. Allowing aircraft members to suffer hearing losses when proper protection is available is false economy. The degradation of performance makes it even more wasteful.

A new armored vehicle crewman's helmet is now in the development stages and testing should begin on this commercially developed item in the near future. The extreme noise level produced by tanks and other armored vehicles is a real source of concern to the Army. Acoustic damage is more likely to occur to a tanker than to a clerk-typist.

A major problem area is that the Soldier who finds the standard issue ear plugs uncomfortable will use field expedients such as cigarette filters or nothing at all. As mentioned before, such expedient ear plugs provide little protection and the naked ear can withstand only so much noise over a period of time.

The conferees were in agreement regarding a program of education on the command level about the rising instances of hearing loss and protective device utilization. It makes no difference how effective the device is if it is not worn. It is the commander's responsibility to insure that each man under his command uses the provided acoustic protection devices. It is not unusual to find basic trainees on the firing line with their ear plugs still in the case hanging from their shirt pocket. Trainees are now required to wear ear plugs on the rifle ranges.

Hearing losses in the Army are indeed on the rise but the Army is making moves to arrest this rise. Education of the commanders and the individual Soldier is one method but it is conferences such as the Acoustic Protection Conference that will help stimulate action towards providing new and better methods of protecting our men in uniform.

A CHANCE TO DO YOUR OWN THING

BY LTC HELLMUT L. MEYER

Pictured at left, CDEC Soldiers go into action negotiating a steep cliff. Spotlighted at left is Lt. Timothy H. Couch demonstrating the proper "L" position during rapelling exercises conducted at Hunter Liggett Military Reservation. After training in the Post pool, men of the Experimentation Battalion take to a real body of water (right).

How do you develop a training program that insures the maintenance of a high level of military preparedness among your troops, yet precludes the most inherent, but necessary, characteristics of repetition—one which, all too frequently, leads to boredom and apathy?

That's a good question. And it is one which has been answered excitingly at the Army Combat Developments Experimentation Command at Ft. Ord, Calif., by its Experimentation Brigade.

This is their answer: By designing a program to supplement the more formal aspects of training: a program that will provide both physical and mental challenges in developing the normally untapped but highly desirable individual skills present in the American Soldier. In short, by coming up with the type of training that the average Soldier will not only respond to, but will also look forward to—yet, it can be readily implemented at the unit level without sacrifice of principal mission or detrimental effect to the organization's readiness posture.

Impossible, you say, in view of today's complex missions, shortages of personnel and insufficient time for commanders to accomplish even mandatory training? Nothing could be further from the truth.

CDEC's Experimentation Brigade, which represents some 2,164 officers and men, and the organization to which all the command's player personnel—data collectors, drivers, engineers, communications and maintenance specialists, are assigned, recently initiated a program which is composed of officers and enlisted men who have volunteered to participate in training after duty hours. Each training class has approximately 20 students who pay $35.00 to cover the costs of the various activities.

The name of the program: "Adventure Training."

The concept is not a new one. A predecessor called "Adventurous Training," was initiated by the British Army several years ago as a means of compensating for a reduction in overseas service opportunities. However, the original idea may well have emanated from the American Revolutionary days of Major Richard Rogers who, some two hundred odd years ago, charged his "Rogers' Rangers" to develop their individual skills in just such a manner.

In the case of the current British Army approach, such training consists of two-week expeditions by teams comprised of between four and eight members which operate within England as well as within other countries that constitute part of the United Kingdom.

A similar program, currently in effect at the United States Army John F. Kennedy Center for Military Assistance, Ft. Bragg, N.C., is known locally as "Spartan Training" and involves such pursuits as speed marching, underwater demolitions, strategic patrolling, border surveillance operations and contingency language training.

The Experimentation Brigade of USACDEC may well be one of the first orthodox organizations within CONUS to initiate such a program—and to implement it on such a comprehensive scale.

The adoption of the program did not come easily. With a majority of its personnel fully committed or "loadlisted" to the support of two and sometimes three concurrent experiments and with better than 60% of the organization's assigned strength located not at Ft. Ord, CDEC's headquarters, but at its field laboratory on the Hunter Liggett Military Reservation, some 83 miles removed, the Experimenta-

continued on page 14

LTC Meyer is the Executive Officer of the Experimentation Brigade of CDEC at Ft. Ord, Calif.

Shown directly above and to the left are the Adventure Training participants getting ready to make their first jump. A member of the Experimentation Brigade (top left) exits an aircraft during the first jump of the Sport Parachuting program of the Adventure Training Series, while the Soldier above right is on his way. Pictured at right is the final phase of the jump.

Another phase in the Adventure Training Series was the use of the B–12 boat, which a group of Soldiers from CDEC's Company F, Experimentation Battalion, are shown above trying out.

tion Brigade had to insure not only the retention of a high degree of responsiveness to experimentation requirements at two sites, but also had to accomplish, simultaneously, the more routine and mundane formal portions of the Army Training Program.

Nevertheless, with the objective of providing a break in routine duties and in the hope of realizing, as an outgrowth of the effort, an enhancement of troop stamina, esprit and morale, Colonel Charles G. F. Wahle, the Brigade Commander and the man responsible for the concept, fully committed his organization to the program. Necessary guidelines and suggested topics were provided to the battalion commanders who then encouraged their junior officers to develop these further as well as to come up with additional subjects for integration into the program.

By August 1971, the theory of Adventure Training had become fact.

The first course of the program was conducted in conjunction with "Cable Run II," a joint training exercise conducted by the Army's Special Forces and the US Navy at both Hunter Liggett and Los Padres National Forest, during the period of 9 through 21 August 1971. An initial contributory effort of one officer and twenty-five enlisted men from the Brigade's Experimentation Battalion took part in the exercise and ultimately participated in extended cross-country navigation, small boat handling, as well as extraction by submarine.

The second course, initiated by the Brigade's Support Battalion during the latter part of September and early October, offered Survival Swimming and River Crossing Techniques—and provided training for seven officers and eighty enlisted men.

Taught by Ranger-qualified personnel assigned to the CDEC Battalion, the course made use of Ft. Ord's swimming pool as well as the Mission Creek swimming hole at Hunter Liggett and culminated with the administration of the Ranger Qualification Swimming Test and the construction and employment of a field expedient rope bridge.

By the time the swimming course had been completed, the concept as well as the possibilities of Adventure Training, had taken a firm hold. In October, the Experimentation Battalion began a SCUBA course for twenty volunteers, each of whom contributed $35.00 for equipment rental and professional instructions. Students underwent twelve hours of classroom instruction, twelve hours of pool instruction, spent about seven hours in actual diving exercises in the nearby Pacific Ocean and, upon graduation, were awarded an accredited National SCUBA Diving Card, licensing them to dive in the state of California, as well as in most other parts of the country.

By late October, it was the Experimentation Brigade's own Headquarters Company's turn to initiate a course—that of Sport Parachuting.

Obtaining the services of Master Sergeant James K Stoll of Ft. Ord's Parachute Club, an expert with some 20 years of jumping behind him, the course accepted 20 volunteers from within the Brigade and conducted its ground phase at Fort Ord during week nights.

The high point of the course was a static line jump, conducted at the Fritzsche Army Air Field Drop Zone, under Master Sergeant Stoll's supervision.

Most recently, the services of two Special Forces instructors were obtained by the Brigade, to conduct a course in Mountain Rappelling at HLMR. Designed to provide the organization with a qualified cadre, who would then be utilized to teach rappelling techniques within their own units, the course included methods for selecting and establishing rappelling sites, demonstrations of equipment and safety measures required in the conduct of rappelling, as well as methods of instruction, and field work in the practical aspects of the art.

Adventure Training is not repetitive, since military-related subjects taught under the program are usually new to the Soldier and, in some cases, to the Army. Emphasis is placed on subjects that are both physically and mentally challenging, with the degree of interest demonstrated by participating troops being called "unprecedented" by subordinate commanders.

Neither does the program inimically affect the commander's already abbreviated time available for training. By its very flexible nature, Adventure Training offers features which permit him to schedule it during one or two day breaks in experimentation, to retain pre-packaged courses which can be implemented on short notice when a sufficiently large number of personnel become available or, in the final analysis, should time simply not be available, to conduct classes during off-duty hours, provided prospective students prove desirous enough.

The Experimentation Brigade does not intend to let the project rest here. Already in the mill are such future programs as hiking, canoeing, sailing, bicycling, skiing, spelunking and gliding.

Nor is Adventure Training limited in applicability to the type of unit represented by, or the environment around, the Experimentation Brigade.

Any commander with the necessary insight, a little resourcefulness, and the ability to capitalize on the terrain, facilities and expertise that are available locally, can readily convert his training program from one which previously represented one of the more onerous aspects of the Army into the most desirable facet of military life. He is limited, in a sense, only by his imagination and that of his troops.

Lt Col Meyer was assisted in researching this article by Capt John W Mellon, Requirements Officer, S2/3, Experimentation Brigade.

NOW IS THE TIME FOR ACTION

BY GENERAL WILLIAM C. WESTMORELAND

The period of introspection, new studies, and special projects is essentially over. Now is the time for action. We must all get in harness and meet head-on the interesting challenge of revitalizing, rejuvenating, and rebuilding the Army—a task that is already well underway.

Our goal is to ensure that our country has the finest Army in its history, one based on the highest standards of professionalism, on self-discipline, and on individual dedication and pride. To accomplish this, we must return to the fundamentals I stressed in my November 1969 letter on Integrity; my April 1971 letter to all officers and noncommissioned officers, with its inclosure "Guidance to Officers on How to Develop your Noncommissioned Officers;" and my September 1971 "Special Trust and Confidence" letter to all officers. These basic tenets should guide our efforts, be discussed frequently at Officers Calls throughout the chain of command, and be used as yardsticks in measuring Army professionalism.

In accepting the challenge to build a finer Army, you should do everything possible to accomplish the following:

- Raise the level of professionalism in the officer and noncommissioned officer corps.
- Develop an attitude of confidence and enthusiasm throughout your command as we continue to move through this period of transition.

- Ensure that the chain of command continues to emphasize and practice the principles that have been re-enunciated in the Leadership for Professionals program.
- Ensure that each commander and leader pushes the "care factor" until it becomes a way of life for him. In this connection, I am gratified by the growing success of the Army Community Service program.
- Assign training missions that are realistic, and provide commanders full support in their development of meaningful and dynamic training programs.
- Emphasize physical training and intramural athletic programs. As a supplement to formal physical training, the new Army Sports Program, REACH, has the potential to assist materially in achieving enhanced physical fitness as well as greater cohesiveness and esprit within all units.
- Exploit the value of precise close order drill. It has an important role to play, if not overdone, both in restoring the confidence and prestige of our noncommissioned officers and in instilling discipline in individuals and small units.
- Give concerted attention to improving the Army Food Service Program.
- Initiate action to ensure that the Maintenance Assistance and Instruction Team program does not become onerous and ineffective, as did the CMMI program. Concurrently, however, ensure that maintenance standards do not deteriorate.

As we develop an increasingly professional Army, our positive qualities will be clearly demonstrated. I am convinced that we are on the right track, but there must be no halfway measures, lack of understanding, or uncertain support anywhere in the chain of command.

Ours is an exciting and demanding challenge, for it embodies the opportunity to shape the Army of the future.

MODERN MANUALS FOR A MODERN ARMY

BY COLONEL B. H. HILL

Among the most pressing problems facing the Army today are: How can we improve professionalism, leadership, and communication between and among soldiers? These crucial questions challenge Army leadership at all levels as we move from a forced draft establishment to the Modern Volunteer Army. How we answer these questions can make the difference between success and failure in meeting this great new challenge.

Lieutenant General John Norton, the Commanding General of Combat Developments Command firmly believes that better texts for the troops will help to solve the problem posed by these questions. We at Headquarters CDC know from discussing doctrinal publications with him that he wants to revive interest in professional literature (particularly field manuals) and to increase the role it plays in educating the troop leader. He reads field manuals—and he expects every leader to. He wants CDC manuals to lead the way in gaining wider acceptance among soldiers. To this end no detail of format, writing style, or composition can be overlooked.

While General Norton is fully aware of the CDC field manual improvement program and is pleased at the progress already made, he wants CDC to do more—faster. The Concepts and Doctrine Directorate has received clear guidance from him for additional improvements. Specifically, we have been challenged to insure that all CDC manuals use simple, straight-forward language, add more color, eliminate needless repetition, include more combat case histories and lessons learned, and summarize doctrinal points made in the manual. Field manual producers have been asked to consider printing more manuals in the pocket size version and to explore the use of audio-visual cassettes as a substitute for or supplement to selected manuals.

Colonel Hill is assigned to the Programs and Management Division of the Directorate of Concepts and Force Design, CDC Headquarters.

On several occasions the CG has emphasized that the aim of the CDC doctrinal literature program is to equip the soldier with the knowledge needed to gain self-confidence and understanding. If we achieve this aim we will win the battle for technical professionalism and will have gone a long way toward the creation of the perfect springboard for communicating ideas, orders, and the exchange of information among all ranks. This is CDC's challenge, but what have we done about it?

This sort of guidance generates action. You better believe that the people in CDC responsible for programing and processing field manuals took this guidance to heart and moved out smartly. They immediately briefed General Norton on a solid list of recent improvements used by the agencies to make field manuals more readable and useful to the soldier. He was shown published field manuals with illustrated covers, case histories, combat lessons learned, prefaces, functional color illustrations, and chapter summaries. Other techniques were mentioned that are underway or under consideration—such as the use of bold face type, underlining, marginal notes, italics, colored ink and paper, typographical devices such as boxes and extra spacing. General Norton asked one question, "When do I see all these improvements in one manual?" We're working on that now. FM31–60, River Crossing Operations, from Concepts and Force Design Group, now at the printer, comes close to meeting this requirement. We will soon have more like it.

Many of our readers are not sure who writes field manuals. Our answer would be—you do. We all do. Field manuals are guides to how we do things in the Army. They are developed from the experiences of people and units over time in the case of known technology, and reflect the best projection of logic and judgement in the case of future or developing technology, organizational structure, and strategies. The requirement for new manuals usually stems from approved doctrinal studies, changes in organization, changes in equipment, comments from the user in the field, lessons learned in combat, or, in some cases, directives from higher headquarters when strategic or technological break-throughs have made old methods obsolete. While it is true to say that we all write field manuals, that general statement does not fix responsibility. So, there is an Army Regulation which spells out who does what—and to whom. Each of three major Army commands, Continental Army Command (CONARC), Army Materiel Command (AMC), and Combat Developments Command (CDC) has a responsibility for writing manuals. CONARC prepares applicatory manuals (how we shoot), AMC prepares technical manuals (how it works), and CDC prepares doctrinal manuals (how we fight as a system). The work horses who write and keep current some 242 doctrinal manuals are the CDC agencies, US Army Alaska, US Army Southern Command, and the US Army Security Agency. The production schedule for changes, revisions, and rewrites for these manuals is managed by Concepts and Doctrine Directorate HQ CDC, and the groups.

Now you might say that's good, but let's get back to the main subject, improvement of field manuals. How are you streamlining the content of manuals? How are you making them more readable? Less complicated? More complete, so I don't have to read several to answer my problem? And how are you reducing the total number of manuals I must keep in my training room– Obviously there is no simple, short answer to these questions. Let's try to answer them this way.

CDC has a Field Manual Council headed by a Colonel whose primary mission is to find ways to make manuals more acceptable and useful to the Soldier. Each CDC Group and the USASA Combat Developments Activity has one voting member on this Council. CDC Agencies are usually invited to attend sessions as participants/observers. The Council meets from two to four times each year to discuss just such questions as were posed in this article. In addition, the Council studies complaints and comments from the field and from participants in order to devise techniques to make all manuals more readable and useful.

Many of the innovations appearing in the newer manuals are a direct result of the deliberations of this Council. Future discussions of the Council will be aimed at further improvements to readability. The Council will consider the use of such items as pre-addressed tear-out comment sheets, distinctive covers for classified manuals, and questionnaires to commanders/troop leaders to help determine the number and type of manuals a company, troop, or battery should have on hand. They will explore the feasibility of developing audiovisual cassettes as manual substitutes or supplements, and a host of other steps to refine our manuals. The Council welcomes ideas and suggestions from the field for these quarterly meetings.

At CDC we get these questions frequently, "What happens to my comments on manuals? Who listens? What do they do about it?" Suppose your comment was "Get the junk out of the manuals." And we do hear this one pretty often. Now put yourself in our shoes for a minute—what can you do with this comment? You have to ask these questions: What manual does he refer to? What part of it? What does he mean by junk? That's exactly what we do. We go back to the source and we ask specific questions until we identify the real issue. Having done that, we, or the appropriate agency, then attempt to reconcile the suggestion and print it with the next manual change. This example highlights our problem with complaints and explains why there is a considerable time lag before changes can be made. We can solve your problem, and ours, much more quickly if you will be specific; that is, tell us the title or number of the field manual, exactly what you think is wrong, precisely what change you recommend, and what action, if any, you have started from your end of the pipeline to remedy the situation. With specifics like this to go on we save everyone money, effort, and time—and you will see your recommended changes in the very next revision or change sheet to that specific manual.

We believe our CDC Group and Agencies have made a good start and are on the right track to meet this formidable challenge—new manuals for the new Army—but we do need your help. Somewhere out there are good, simple ideas for improvement that we haven't thought of—please help us to help you.

[illegible] variety of [illegible] make them [illegible]

AMERICAN SOLDIER OF THE 70's

COL Evans, CO of USACDCPASA conducts a progress meeting on the Personnel Offensive Study with members of the Study Group.

The fact that each new generation of Soldiers brings some form of change to the U.S. Army. . . . good or bad according to the vantage point. . . . has been a bone of contention among old Soldiers ever since the Revolutionary War. And, like Mark Twain's famous comment about the weather, most everybody has been prone to talk about the changes, but no one ever really did anything about them.

No one, that is, until U.S. Army Combat Developments Command (CDC) Personnel and Administrative Services Agency (PASA) came up with an in-depth study of the young Soldier of the 70's and his effect on the Army's personnel policy and doctrine; training and leadership.

The "Personnel Offensive Phase I" was christened by the United States Army Combat Developments Command, Personnel and logistics System Group, Ft. Lee, Va., in January 1971. Just as the age of Aquarius is dawning, so too, is the dawning of the age to modernize the Army, to thrust forward in the personnel field. Thus the title "Personnel Offensive" was born.

The study represents CDC's initial responsibility for planning an Army-wide major study in the personnel field. Further, it is one of three substudies making up a DA DCSPER priority study "American Soldier in the 70's." The other two substudies are being developed by the Research Analysis Corporation: "Value Conflicts Between Civil Society and Military Institutions" and "Future Impact of Dissident Elements Within the Army on the Enforcement of Discipline Law and Order."

PROJECT'S BEGINNING

According to Colonel Lester J. Evans, Commanding Officer of CDC's people agency, PASA, the research phase of the study was begun in January 1971. "We began the study," he said, "after two primary assumptions had already been made. One was that personnel coming into the Army during the 1970's would differ in social and personal characteristics from persons who entered the Army in earlier decades. The other was that because of the difference in incoming personnel, it would be necessary to modify Army policy and doctrine regarding personnel management and administration training and leadership."

YOUTH CHARACTERISTICS

Based on information gleaned from hundreds of printed references ranging from the popular "The Greening of America" to more scholarly national studies and attitude surveys like "The Purdue Public Opinion Panel," nineteen personal and social characteristics were selected as descriptive of these young people from 14 to 24 years of age.

PASA members realized that not every individual between the age of 14 and 24 will possess every characteristic to the same degree. They also understood that these characteristics did not represent sudden and totally new changes in the young people of America. The concept behind such a listing was that attitudinal and behavorial changes which have been culminating for years had become widespread enough and significant enough in the 70's that they could not be avoided or ignored—no matter what segment of the populace the military will enlist.

Within the 19 probable personal and social characteristics several were identified as having a potentially strong negative impact upon the military structure, unless policies and procedures within that structure are changed to address these characteristics. Some of these are:

CHALLENGING

Youth question and challenge those things which they feel have no sound basis. They do not recognize authority by superficial trappings (name, title, rank, etc.). Nor do they assume a transfer of professional competence to areas not associated with that job. Rather they tend to respect only demonstrated ability or competence. And as they are not awed by authoritarian figures, they are prone to challenge authority with every new situational confrontation until competence is demonstrated in that situation.

SELF-CENTERED

Permissive child rearing and a socially mobile adult society have been instrumental in causing self-centered emphasis in the young. Self-actualization, self-achievement, self-satisfaction, and self-development have taken on increasing importance in the spectrum of values.

INDIVIDUALISTIC

The emphasis on individuality and the intensity with which youth pursues this individualism is greater with the current youth group than in previous years. With the increasing anonymity of rapidly expanded technology and a highly automated, urban, mass-producing and consuming society, youth becomes increasingly concerned with retaining a sense of individuality. He becomes more sensitive and more hostile toward anything which would tend to encroach upon his sense of individuality.

COMBAT FACTORS

Concurrent with the development of these personal and social characteristics, the PASA team was trying to determine those factors which have an influence on individual performance in combat. Early research produced 23 of these factors, and a later survey, conducted among a total of 500 active duty generals, colonels and command sergeants major, produced an additional nine factors, including the stress factors of drugs and alcohol and boredom and inactivity. Comparing these 32 factors and the related 19 characteristics would provide an analysis of what the Army must do to satisfy an adequate number of factors influencing effective performance in combat in order to achieve an effective unit. Further analysis would determine what had to be done to satisfy an adequate number of personal and social characteristics of the individual in order to achieve a satisfied and effective Soldier and ultimately an effective combat unit.

THE BRIDGE

Early in the analysis phase of the study, the PASA study team determined that there must be a bridge with which to span the differences associated with the changing characteristics of youth and the institutional practices of the Army. It was apparent that the Army possesses, within its policies affecting personnel, the building blocks needed to construct a meaningful and enduring bridge.

The blocks which can construct the bridge are classification, assignment and utilization; incentives; leadership; and training. When functioning properly in unison, these functional areas will interact to foster positive impact and reduce negative impact of the youth characteristics. Conversely any weaknesses in these areas identified in the Army today could, if uncorrected, prove to be a source of greater discontent in the future.

LEADERSHIP

Within the area of leadership, it was found that the suspicious nature of youth, combined with their disenchantment about the adult world of today, fosters a negative attitude toward the establishment and those who represent it. Old styles of leadership, although successful in the past, may not be as effective, and may even be counterproductive, in leading troops in the 70's. In order to deal with those Soldiers, the leader must be able to concentrate greater efforts on the individual and his problems. There must be an open and honest atmosphere to promote mutual confidence and trust between the leader and the led.

TRAINING

The impact upon the Army's training mission is equally great. Since youth have come to embrace intensified concepts of individualism, social awareness and liberalness, as their levels of educational achievement and sophistication have risen, substantial changes have occurred in their academic, professional and social expectations. This progressive change has not been matched by similar changes in either the content or the methods of military training and indoctrination. There is a good deal of evidence to suggest that we have utilized mental and physical harassment in lieu of providing an adequate challenge to the youth of the 70's. The training environment must shift its methods and practices to emphasize tougher, more individualized, and more realistic training.

The message, "I don't want to play Army", on the Soldier's helmet (above) reflects the attitude of many of today's youth.

CLASSIFICATION, ASSIGNMENT, UTILIZATION

The service entrant of the 70's will be a better educated, more sophisticated individual than ever before. He will be functionally oriented and demand practicality and usefulness in the things he does. Though he will bring with him both the capability and the motivation to get a job done, and done well, his industriousness may be stiffled by meaningless jobs, unnecessary movement and less than effective utilization. Of necessity, then, the Army must make every effort to assess properly the qualifications of its military entrants in the 70's to insure that the skills and education they possess are used to the maximum benefit of the Army and the individual.

INCENTIVES, REWARDS, PUNISHMENT

The level of affluence to which youth have been exposed in our society, and the Soldier's

Familiar sights at many posts throughout the world are coffee houses and rap centers where Soldiers can speak freely about the Army (top left and right, bottom left). Army Secretary Robert F. Froehlke (bottom right) has a rap session with junior officers of the 14th Armored Cavalry.

knowledge of the life style that can be enjoyed by his civilian counterpart, have resulted in impatience with and rejection of the economic hardships of the Army. Such deprivation, whether it results from the real disparity in terms of money and housing, or from a confusion about the availability and value of all military benefits, will have an adverse effect on an individual's pride, self-image, and motivation. Without doubt, in order to attract and retain quality personnel, a serviceman's pay and fringe benefits must bear a reasonable relationship to those of the civilian environment.

WORKSHOP

After the initial analysis phase, PASA staffers organized a 3-day workshop to add depth and range to the study effort and research findings. Membership selection for this workshop was based on the expertise and experience an individual could provide in one of the already established problem areas of. . . . leadership. . . . training. . . . classification, assignment and utilization. . . . and reward, incentive and punishment. Personnel, ranging in grade from Specialist Four to the rank of Colonel, represented commands and activities, which included the Army War College, the Infantry School at Ft. Benning, Ga., the US Military Academy, the US Army John F. Kennedy Center for Military Assistance, the 82d Airborne Division, activities at Ft. Benjamin Harrison, and many others. Ft. Harrison participants, numbering 31, sat on the four commit-

Personal and social characteristics of the individual Soldier must be realized in order to achieve a satisfied and effective Soldier, and ultimately, an effective combat unit.

tees organized to examine the problem areas established by the earlier research.

Colonel Evans noted, "We wanted to add a little depth to what we already had and many of the recommendations developed during the workshop supported our initial research findings. We actually programed certain questions to each of the Committees so they could go into them in depth." He also stated that "This workshop was highly successful and the participants were true professionals."

ALTERNATIVE APPROACHES

While many of the problems identified in this study are not new to the Army, unless something is done to resolve these problems now, they will increase greatly in the 70's due to the intense and widespread nature of the changing attitudes of youth. It was this analysis that resulted in the alternative approaches outlined below. These suggest that the Army must:

- Adjust mental and physical standards to actual job requirements. Avoid over-rating job requirements.
- The changing role of women in society and the labor force represents a great potential for use in the military. However, imaginative policies will be necessary to achieve the full potential of this resource. We should integrate WAC personnel into all branches of the service with the exception of combat arms branches, and utilize women in all TOE positions which do not call for a combat arms MOS.
- Standardize entrance requirements for both sexes. Present standards with respect to age, education and marital status are discriminatory in nature and do not take full advantage of available woman power.
- Expand the lateral entry program to offer increased opportunities for rapid advancement of the individual while achieving optimum utilization of civilian acquired education, training and skills.
- Establish a two-year PCS restriction for other than short tour areas to reduce unnecessary or nonproductive personnel turbulence.
- Institute a one-year probationary enlistment option to be terminated at the discretion of either party. Participants in such a program

Yaung men entering the Army today may laak the same as thase in the past, but their ideals and attitudes are vastly different.

would be afforded minimal training and accrual of service benefits.

- Simplify separation or elimination procedures regarding substandard personnel.
- Place more emphasis on the chain of command. Increase authority at the lower levels where it is needed. Although the theory behind the "rap session" may be a good one, the damage it is doing to the esssence of the command structure is increasing.
- Establish a school system for NCO's comparable to that of the officer corps to include basic (E-4/E-5), advanced (E-6/E-7) and senior (E-8/E-9) courses.
- Institute a company commander's course within each branch.
- Conduct advanced individual training (AIT) within a training unit of the parent division, or branch service school, for nondivisional personnel assigned there.
- Test the potential qualifications of personnel selected for consideration as instructors prior to assignment to these duties.
- Pay should be related to performance and skill with less emphasis on longevity and rank.
- Establish graduated retirement benefits for incremental periods less than 20 years military service. Provide additional service credits for duty in combat arms MOS's.
- Reward performance in the form of cash bonuses, accelerated retirement credits or special administrative privileges.
- Promote personal and family welfare by authorizing dependent travel regardless of rank or time in service.
- Increase the commander's authority in disciplinary matters unrelated to criminal offenses.

Though the above are only a few of the almost 200 alternatives developed in the "Personnel Offensive," they give some idea of the scope and progressiveness of the study.

Colonel Evans concluded, "We all know the Army today is faced with many problems that cannot be ignored or wished away. I doubt if there is any person or group of persons that can put their finger on all of them; however, those problems that PASA identified and their alternative approaches should bring us closer to defining and solving them. We need more new thoughts, modern techniques, and updated policies to reach the youth of the 70's. We need to know the best ways to lead our Soldiers of the 70's."

The Forum

Recently the United States and the US Army have received great criticism regarding the role of the US in Southeast Asia. Many have spoken out against their government and their Army. But those who criticize so loudly have forgotten that because America is free they are able to voice their opinions.

The ARROWHEAD received a letter from one of its readers who feels most strongly in our great country. He expresses his feelings in the form of a song to the symbol of our nation. Mr. Moreno Nemo's song, "The Flag of Freedom" illustrates that patriotism is still alive and well in America.

THE FLAG OF FREEDOM

All, behold The Flag of Freedom
Give its glory to the sky!
We'll keep the Stars and Stripes of America,
The Flag of Freedom, flying high!

Under God was born our Nation
Faithful, strong and free.
Under God we pledge allegiance
To the banner of our great Country.

All, behold The Flag of Freedom
Give its glory to the sky!
We'll keep the Stars and Stripes of America,
The Flag of Freedom, flying high!

THE CDC SUSPENSE CALENDAR

FRI	FRI	THU	WED	TUE	MON	FRI
8	7	6	5	4	3	2
16	14	13	12	11	10	9
23	22	21	20	19	18	17
30	29	28	27	26	25	24
37	36	35	34	33	32	31

1. Every assignment is a crash program. With this calendar, the C.O. can ask for the work on the 7th and get it on the 3rd.
2. All projects are to be completed by Friday, so there are three Fridays in each week.
3. There are seven extra days at the end of the month to take care of all those projects which "must be completed by the close of the current month."
4. Recurring reports due on the first and fifteenth days of each month do not have to be written since these days do not exist.
5. There are no Saturdays or Sundays, so there is no week-end duty to pull and no week-end overtime.
6. There may be times when it is impossible to complete a project or study as quickly as yesterday. These cases should be handled with a very tactful "I'm sorry, sir, but the day before yesterday is as soon as it can be finished."

Submitted by Captain G. D. Clark, Jr., USACDCTA, Ft. Eustis, Va.

The Point of the Arrow

MARCH QUESTIONS

1. What is a threat study?
2. How large is the Soviet Army?
3. Generally speaking, are Soviet tactical organizations larger or smaller than US counterparts?
4. What is the Qualitative Management Program for Enlisted Personnel?
5. What is PRA?

FEBRUARY ANSWERS

1. The rate at which binary digits, or pulses representing them, pass a given point on a communications line or channel is the definition of *Bit Rate* in a digital computer.
2. The necessary stimulation for a chemical laser could be provided by the chemical reaction of *hydrogen* with *fluorine.*
3. In high energy lasers, which laser technique has the greatest theoretical efficiency, i.e. the greatest power output for the least input?
   - a. Ruby rod
   - b. Chemical
   - [✓ c.] Gas dynamic
   - d. Electric discharge
4. Increased cannon artillery ranges can be attributed to improved technology in which of the following areas? (select 2)
   - [✓ a.] Increased chamber volume and tube length
   - b. Auto-frettage techniques
   - c. Use of bore evacuators
   - [✓ d.] Improved aerodynamic shapes for projectiles
5. There are several memory devices developed by which a computer can "store information". Which of the following below is not considered a memory device?
   - a. Magnetic drums
   - b. Magnetic discs
   - [✓ c.] Magnetic isomers
   - d. Magnetic tapes

For God and Country

Out of World War II came a beautiful poem from a talented GI who found consolation from an awakened faith a few days before he died. The following poem was found in his pocket in his own handwriting:

"Lord God, I have never spoken to you,
But now I want to say: How do you do?
You see, God, they told me you didn't exist;
And, like a fool, I believed all this.

Last night from a shell hole I saw your sky
I figured right then they had told me a lie
Had I taken time to see things You made,
I'd have known they weren't calling a spade a spade.

I wonder, God, if you'll take my hand,
Somehow I feel that you'll understand.
Funny I had to come to this hellish place
Before I had time to see Your face.

Well, I guess there isn't much more to say,
But I'm sure glad, God, I met You today.
I guess Zero hour will soon be here,
But I'm not afraid since I know You're near.

The signal! Well, God, I'll have to go.
I like You lots, I want you to know
Look, now, this will be a horrible fight,
Who knows, I may come to Your house tonight.

Though I wasn't friendly to You before
I wonder, God, if You'd wait at Your door.
Look, I'm crying! Me, shedding tears!
I wish I'd known You these many years.

Well, I'll have to go now, God. Good-by.
Strange—now, since I met you, I'm not afraid to die."

Happy is the man who has faith. It is true, he must also walk among dreadful shadows on this earth, but he moves among them as a little child crossing a dark room with a wildly beating heart, who knows that on the other side, in the next room, his father is waiting in brilliant light to receive him with open arms.

RIO GETS NEW CHIEF

The new chief of the Research Industry Office (RIO) of the US Army Combat Developments Command, located at Ft. Belvoir, Va., is Colonel Gregg Henry. Replacing Colonel Gilbert R. Reed in the position, Colonel Henry was formerly Chief of the Munitions Division at the Combat Developments Command headquarters.

Colonel Henry, a native of Ohio, started his Army career in the Coast Artillery Corps in 1943. Following duty with various artillery units, including combat operations with the 6th Armored Division in Europe, he was assigned to the Research and Analysis Division, Antiaircraft Artillery and Guided Missiles Center, Ft. Bliss, Tex. In 1950, he transferred to the Chemical Corps. He has held positions at the Chemical Corps School; participated in atomic weapons tests at the Eniwetok and Nevada test sites; held CINCNORTH staff duty in Oslo, Norway; and done liaison work with the Naval Radiological Defense Staff.

Other assignments include Pentagon duty, MACV staff in Saigon, Office of the Joint Chiefs of Staff, and a liaison assignment with the Atomic Energy Commission.

Colonel Henry is a graduate of the United States Military Academy and holds a masters degree in Bioradiology from the University of California at Berkeley. His military education includes the US Naval Postgraduate School, the Chemical Corps School, Command and General Staff College, and the Army War College.

Spot Reports

Scouting

Ft. Leavenworth, Kan. . . . "On my honor I will do my best, to do my duty to God and my country . . ."

It would have taken a lot of insight to see that the twelve-year-old Boy Scout who repeated those vows in 1931 would one day become a Cubmaster, Scoutmaster, Explorer Advisor and District Commissioner; finally winning the Silver Beaver, Scouting's highest award for adults at the district level.

But that's the way it is in Scouting—you can start small and end big. Command Sgt. Maj. William Craig, now with COMS Group, took his first step as a Scout in Lord Baden-Powell's Boy Scouts in 1931, and two years later was Eagle, as high as any boy can go.

Many stop there, satisfied to have achieved that goal—but Sergeant Major Craig did not stop. A love for teaching boys prompted him to go on—from Cubmaster through Neighborhood Commissioner, Assistant District Commissioner and, finally. District Commissioner.

"It's a worthwhile program because it makes better citizens of boys. It makes you look to the future," he says.

In the 40 years since Craig became a Boy Scout, there have been plenty of changes in Scouting. Still, though, the basic idea is to get outdoors.

The number of merit badges (those bright circles of cloth representing skills attained) has grown 50 per cent as new subjects have been added. Atomic energy and data processing are two of the new ones. The Boy Scout Handbook has been rewritten seven times in 30 years and even girls have been added to the high school age Explorer program.

Commenting on the arrival of Scouting in ghetto areas and the formation of minority-oriented troops, Craig said, "Regardless of race, color or creed; regardless of environment, the program promotes good citizenship. There definitely is a need for Scouting in the ghetto areas.

At the present time, Craig is engaged in recruiting youngsters who are not involved in the Scouting program—a thankless task that might be especially hard at Ft. Leavenworth, which has the world's largest Cub Pack and where the Boy Scouts are equally active.

Craig, who has been with the Boy Scouts from Europe to the Far East, summed up his Scouting career with these words: "I like to give these boys some of the experiences I had when I was a Scout," and especially "try to teach these kids to think for themselves and react!"

Legion of Merit

Ft. Belvoir, Va. . . . Colonel Edward V. Maltese was awarded the Legion of Merit (First Oak Leaf Cluster) at a retirement ceremony held in his honor on Monday, 31 January 1972. Colonel Maltese leaves the Army after more than 30 years of distinguished service.

His past duties have included Director of STANO Study Directorate, USACDC Institute of Special Studies, and Director of Intel/STANO Directorate, USACDC Intelligence and Control Systems Group.

Medal Books

A pocket-size booklet entitled "Be Proud," a compilation of facts and illustrations concerning awards and decorations, is the product of several years of research by Col. Lowell H. Landre, U.S. Army, Alaska, combat developments officer.

Recently published, "Be Proud" describes and identifies, in helpful color reproductions, some 60 ribbons that may be worn on the Army uniform. Landre included nonmilitary decorations, medals for United Nations and foreign service, Merchant Marine, Good Conduct, Reserve, and other awards and decorations, with comments on the conditions under which they are earned.

According to the author "During the past 30 years there have been more awards and decorations authorized for wear than during the previous 165 years of our nation's existence. Learning their order of precedence, how they should be displayed, and about the devices that go with them can be time-consuming. I decided to analyze the situation and present it in a convenient form."

Winning Suggestion

Ft. Ord, Calif. . . . Specialist 5 Ronald L. Johnson, (above, middle), of the Army Combat Developments Experimentation Command, whose suggestion that MOS testing at the command's field laboratory on Hunter Liggett Military Reservation be made there—instead of bringing the Soldiers up to the Headquarters on Ft. Ord, 83 miles away—saved the Government so much money that the award-winning percentage of savings for the first year was $840. A check for that amount and an Army Commendation Medal were presented to Johnson by his commanding general (left), Brigadier General Ray Ochs with thanks. Specialist Johnson's wife, Marilyn, (at right) was present for the ceremony in CDEC Headquarters. Johnson is in the Deputy Chief of Staff for Administration and Logistics Office at CDEC, in its Personnel Branch.

Airborne Dragon

Ft. Benning, Ga. . . .There are few Infantrymen who do not know that Ft. Benning is the home of the Infantry and the Airborne Soldier; however, there are not very many Airborne Infantry Soldiers who know that on 25 January 1972, a powerful stranger began its long and vigorous training to become airborne qualified.

At approximately 1200 hours, the Combat Developments Command Infantry Agency, the United States Army Infantry Board, the United States Army Infantry Center, and the Airborne Communications Electronics Board combined forces to observe and evaluate the first airborne drop of the DRAGON. The drop was the first of a series of tests to determine if the DRAGON is worthy of the rugged Airborne Infantryman who will have to use and maintain it in the future.

For those readers who are unfamiliar with the DRAGON, it is the new XM47 Surface Attack Guided Missile System. It is a manportable, wire-guided, antitank missile which has a disposable launcher and a reusable tracker unit. The gunner just pulls the trigger and keeps the crosshairs of the sight on the target until impact.

DRAGON has an increased effective range and kill probability over the 90MM Recoilless Rifle which it will replace. Additionally, its most attractive feature is the unique manner in which the Infantryman can attack and destroy a moving target.

DRAGON has the potential of making every Infantryman a "David" killing a "Goliath" on the battlefield. The rugged design and easy maintenance with Go/No-Go checks should make DRAGON a welcome addition to the Airborne Infantry Rifle Platoon.

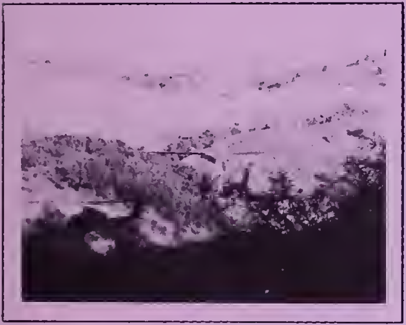
Creative Thinking

Ft. Benjamin Harrison, Ind. . . . The CDC Creative Thinking Award was presented recently by Col. Lester Evans, (above right), CO, CDCPASA, to CPT Ashton E. Gorton, U. S. Army Adjutant General Officer Advanced Course 4–71, Ft. Benjamin Harrison, Ind.

The subject of Captain Gorton's paper was "The A&R Kit" (The Athletic and Recreation Kit). The creative concept introduced by Captain Gorton dealt with the improved construction of a more functionalized and, in addition, more readily supplied "package" out of the existing A&R kit. This special services related product is directed toward improving troop morale by better meeting the recreational needs of troops in an overseas area.

Among the added new features to the kit would be an easily assembled "backboard" for basketball; a table tennis facility; and a more adequate initial amount and subsequent supply capability of team sport equipment.

Safety Record



Ft. Ord, Calif. . . . The 155th Attack Helicopter Company, under the command of Major William W. Whitworth, enjoyed another accident-free flying year. The unit is assigned to the US Army Training Center, Infantry, at Ft. Ord, Calif.; however, it is under the operational control of the Commanding General of the US Army Combat Developments Experimentation Command (CDEC), Brigadier General Ray Ochs, for field experimentation.

CDEC's project Team IV conducted eight attack helicopter experiments—or side experiments—last year, utilizing aircraft and personnel of the 155th. These attack helicopter experiments are, for the most part, conducted at low level, over extremely rugged terrain, utilizing specially configured aircraft for instrumentation purposes, and also using a variety of sensor equipped helicopters for comparative tests of those sensors.

The most significant of these experiments was for an attack helicopter team (AHT), operating as a part of a combined arms team and engaging a tank heavy ground element, to conduct experimentation with tactics, techniques and materiel items which, by increasing the air-to-ground engagement range and providing a first fire advantage to the air, will increase the exchange ratio of the AHT.

A total of 5,644 hours were flown using various types of Army aircraft — AH-1G, UH-1B, D, H; OH-58 and OH-13. The major portion of the hours were flown by aviators assigned to the 155th and TDY aviators from Ft. Knox, Ky., utilizing true nap-of-the-earth techniques over the rolling and rugged terrain of Hunter Liggett Military Reservation, CDEC's vast and highly instrumented field laboratory, 55 air miles from its headquarters at Ft. Ord.

The experiments were conducted with battle situations that simulated as closely as possible, the modern battlefield—to include artillery (demolition), weapons firing battle simulators, a high degree of air and ground command and control, with a ground friendly and Attack Helicopter Team fully exerting the combined arms team operations. Each aviator was well aware of the utmost need for good safety of flight techniques and the need to stay within the requirements set forth for flight procedures in the conduct of the experiment.

An extensive training program was conducted and this, coupled with an extensive and aggressive safety program and the hard work and dedication of everyone involved, resulted in the repeat performance of this fine safety record.

CDEC and the 155th are striving for another repeat performance and continue to use the "rule rather than the exception" philosophy.

Attaboy!

Winners of the "ATTABOY" award for the past month were the members of the CDOC team (pictured above). Team members are left to right, Sp5 Ed Osler, Sp5 Charles Chavez, Major James Justis, Lt. James Loudermilk and PFC Gary Cavatino.

Ft. Belvoir, Va. . . . The Army has developed many leadership techniques for stimulating productivity, discipline, esprit and morale within its troop units. It has, however, experienced difficulty obtaining similar results in providing motivation for high level staff activity. Generally speaking, good staff officers must be self-motivated with rewards and recognition often limited to good efficiency reports followed by routine commendations or awards at the end of their staff tours.

Competition has long been identified as an effective motivator for those who identify themselves as members of a competing team. Competition, however, can be a double-edged sword with counterproductive effort and a distortion of intended goals often the results of unbridled cut-throat competition.

A procedure utilized in the Operations Division of DCSOPS, HQ, USACDC employs the techniques of low-key, humor-oriented competition; group identification; and recognition of day-to-day events as a device for stimulating high productivity, work satisfaction, and morale. This technique is known as the "ATTABOY System." While ATTABOY has long been recognized and used in this country as an informal expression of praise, its use has been formalized into a leadership technique.

The basic elements of the system are three awards which recognize various degrees of performance. An ATTABOY is awarded for any action which reflects particularly outstanding performance. Conversely, an O.S. is awarded for any minor errors or omissions in performance. O.S. stands for "Oh shucks", "Oh shaw!", or other similar expressions indicating that a goof has been made. The third award, a "GOTCHA!" is used for very minor errors of less significance than those eligible for O.S.

Administration of the system is quite simple. The boss has full ATTABOY/OS authority. He awards each, using informal buck slips identifying the subject of the award. The subordinate records the award on his own work sheet indicating the date, the type award (ATTABOY, O.S., or GOTCHA) and the reason for the award. In the case of an O.S., he enters a note on possible lessons learned. Competitive rating periods are established. At the end of each period, competing elements submit their ATTABOY's and O.S's. (GOTCHA's don't count) to the boss. The element with the highest ratio wins the ATTABOY prize for the period.

In the case of the Operations Division of DCSOPS, there are three very dissimilar branches, each with unique functions, missions, and personal experience levels. The division chief must recognize these differences in implementing the system fairly. The division has obtained an ATTABOY trophy (pieced together from a number of broken trophies in the Ft. Belvoir Sports Office) for award to the winning branch for the period with the trophy passed on to the winner of the next time period. In addition, winning branches are authorized three-day passes for their personnel to be coordinated by their branch chief.

The ATTABOY system is designed to contribute to several specific goals:

a. Provide recognition for specific outstanding work which, in isolation, would not be otherwise identified for praise.

b. Identify minor errors of omission or commission which should be corrected.

c. Provide a wholesome, good-natured competitive spirit between similar organizations.

d. Stimulate a team spirit within subordinate branches with each individual feeling a sense of responsibility for the status of his team.

e. Provide some comic relief of otherwise tedious staff environments.

It is essential that the ATTABOY system be implemented with the proper spirit. The philosophy of the boss must be that most or all of his people are basically doing their best and what they need most is guidance, plus an occasional pat on the back or a kick in the tail. The system must be carefully isolated from the efficiency report system which is deadly serious business for all concerned. The system can, however, be used to contribute to a continuous, ongoing counseling program, the responsibility of every rating and indorsing officer.

Balisage

Balisage, a small scale experiment, submitted by the US Army Combat Developments Command Transportation Agency, is soon to be tested by the US Army Combat Developments Command Experimentation Command at Hunter-Liggett Military Reservation, California.

It has long been recognized that the present system of vehicle movement during the hours of darkness under blackout conditions does not permit vehicles to move with sufficient speed. One of the methods utilized at present by the NATO nations to increase vehicle speed is a system of beacon lights on the roadside. This system is known as "balisage." The beacons, which compose the system, are referred to as "balises."

Two types are to be tested—one type to be furnished by France and the second type to be furnished by the United Kingdom. A comparison analysis of the two types of balises will be required. In addition, a determination of the susceptibility of balisage to detection from the air will be made.

BG Boyes Assumes Command of PALS GP

Colonel John H. Boyes, (pictured at right with family), formerly with the Office, Deputy Chief of Staff for Logistics, Department of the Army, was promoted to Brigadier General during recent ceremonies at Combat Developments Command headquarters at Ft. Belvoir, Va. His stars and personal flag were presented by Lieutenant General John Norton, Commanding General of CDC.

General Boyes will assume command of the CDC Personnel and Logistics Systems Group at Ft. Lee, Va. He replaces Brigadier General Ross R. Condit, Jr., who is assigned to US Army, Japan.

The new one-star general attended Pennsylvania State College and received a B.S. in Education (Mathematics and Physics) and the Babson Institute of Business Administration where he obtained a master's degree in Business Administration. He also attended the Command and General Staff College and the US Army War College.

His more recent assignments have been as Chief of Staff, Da Nang Support Command (Provisional), Commanding Officer of the 188th and 73d Maintenance Battalions in Vietnam, and as Project Manager for the Medium Anti-Tank Assault Weapon, now known as the Dragon Missile System.

Among his awards and decorations the general wears the Legion of Merit, Bronze Star, Air Medal and the Army Commendation Medal with Oak Leaf Cluster.

Commanding General **LTG John Norton**
Information Officer **Col. George H. Hallanan Jr.**
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